THE OPTICAL
MAGIC LANTERN
JOURNAL
AND
PHOTOGRAPHIC ENLARGER.

EDITED BY J. HAY TAYLOR.

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Notices.

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NOTICE.

MANY CORRESPONDENTS STILL FORWARD THEIR COMMUNICATIONS TO THE OLD ADDRESS. WILL THEY PLEASE NOTE THAT OUR ADDRESS IS

56, CHANCERY LANE, LONDON, W.C.

Notes.

A CORRESPONDENT suggests that aluminium would be an excellent material for the manufacture of cylinders for compressed gas, as it possesses great strength as well as lightness.

* * *

MR. R. SCOTT recently engaged a large hall at Cardiff to give a lantern service combined with selections of sacred music, with the intention of attracting from the streets those who did not attend any place of worship. As the cost of advertising this had been several pounds, Mr. Scott thought to partly recoup himself for this outlay by making a nominal charge at the doors; the charges being from one penny to fourpence. The entertainment was, however, stopped by the threatened prosecution by a local society, under an unrepealed law passed 125 years ago. Mr. Scott, writing to a local paper, says:—"The question is, are we to be governed by the bigotry and non-wisdom of 125 years ago? In the face of the threatened prosecution I did not give the lantern service; thus disappointing a goodly number of the public who came, expecting faith would be kept according to the announcement bill."

* * *

THE Beverley Photo Society has arranged to give nine popular lectures, with the lantern. The subjects will be:—A Talk on Norway, Cathedrals and Abbeys, Rambles in Belgium, Gothic Architecture, Tour in South of England, Botanical Life, Art and Commerce, English River Scenery, a Night with Dickens.

* * *

MANY lantern slides have a special beauty imparted to them by inserting in the lantern a piece of delicately tinted glass. The tints most suitable must, of course, be left to the operator. If these are chosen with taste, the effects of many of the pictures will be greatly enhanced.

* * *

A GIGANTIC Wimhurst electrical machine has just been made by Messrs. Newton & Co., Fleet Street, E.C., for Lord Armstrong. The instrument will give a spark about 16 inches long, in air, and is constructed with sixteen plates, each of a diameter of 34 inches.

* * *

IN our next issue we will give a description of a totally new form of lantern; one that will hold and change a great number of slides automatically.

* * *

IT is not often that one takes photographs under the same circumstances as Mr. Moncure D. Conway. When giving a recent lecture, which was illustrated by lantern views, he explained that when in the Himalayas, his camera had tumbled a quarter of a mile down a steep mountain—a feat which was not good for cameras. On the camera being recovered it was found to be in fairly good condition, with the exception of a number of cracks. However, he proceeded to make exposures with it, but, in so doing, had to spread out his fingers—*a la* playing the concertina—in order to prevent the admission of light, which manœuvre was to an extent successful.

* * *

IN connection with a lantern recently patented, a wholesale firm (Leviathan, London) have adopted a method of lining the body of the lantern so that the wood-work of a small body, they claim, is prevented from getting damaged. Between the ordinary lining and the wood they insert a sheet of metal, formed like corrugated iron, in a series of waves, this supplying, as it were, a series of upright channels between the metal and wood.

* * *

THE Nalda hand camera, which will be put on the market shortly, will contain eighty films. The instructions for changing the film will be very simple: "Pull the lowest paper tape, then tear it off short."

* * *

MR. ANDERTON's ingenious method of presenting stereoscopic effect on the screen, which was shown at the recent Exbtn. of Phot. Soc. of Great Britain, was the chief attraction on lantern nights. At small cost, those possessing a double lantern may provide themselves with the necessary attachments, full particulars of which may be obtained from Field & Co., 142, Suffolk Street, Birmingham.

* * *

A MAN is nothing unless he is thorough in his work, like the actor who blacked himself all over when he played the part of Othello. There is one lanternist in South London likely to make his mark in relation to his hobby, because he rarely goes to bed of a night without first treating himself to a solitary show of lantern projections in his bedroom. Of the same kidney are some "villadom" amateur members of a photographic society, who, last year, did all the carpentering work of their exhibition themselves. They appeared in shirt sleeves and in orthodox costume, that is to say, in workmen's aprons with bibs, and perhaps with tuckers, for we do not know what a tucker is. They did not knock off at meal times like the regular British workman, but sent out for cans of beer and fried fish, which they consumed to the music of their hammers.

* * *

A SERIES of botanical slides by Mr. Patcham, will shortly be issued by Mr. Alf. Underhill, of Croydon.

* * *

MESSRS. D. NOAKES & SON, Nelson Street, Greenwich, the well-known manufacturers and dealers in lantern apparatus and appliances, give a general invitation to all persons interested to apply for an order to visit their workshops. Those who avail themselves of this invitation, will see much that is of interest.

* * *

THE Hill Norris, dry collodion plates are making a good name for themselves, those who have not yet tried them will do well to send for a sample packet.

* * *

THE American journal—*Photographic Adversaria*—decided last month to suspend its publication until the commencement of the new year, owing to, they say, the lack of interest in photography at the present time, which does not seem to justify advertisers in placing contracts, nor the publishers in an expensive effort to make the magazine what is desired. Upon its reappearance the paper is to be a thoroughly illustrated photographic journal.

* * *

PROFESSOR KŒNIG, of 373, Edgware Road, W., is now booking engagements for his famous entertainments with lantern, lecture, music, and mirth. Mr. Kœnig is also a professor of legerdemain, and is thus able to give two distinct styles of entertainment. Mr. Kœnig has been before the public for many years, and has met with one round of success.

* * *

We chance to know the opinions of some of the highest men of pure science in this country, about compressed oxygen accidents. One of those opinions is that bottles should be charged with gas to but about half the pressures now ordinarily employed, and less attention should be paid to portability. In the days of lower pressures, accidents were less frequent. Another opinion is, that it is not easy to secure the absence of grease about the nozzles of the bottles, because the floating dirt in the air is greasy, and whenever air or other gas flows through limited orifices, there is sure to be a deposit of grease. When any ventilating apparatus is fixed in the wall of a room, a greasy dirty area gradually appears around it. A third opinion, we have heard, comes from some practical lanternists; it is that the lever handles used for turning on the gas from bottles are usually too short, so that the gas can not always be turned on steadily, but may start with too much of a rush, which means unnecessary friction at and about the orifice.

* * *

In relation to the subject of colourless glass for triple condensers, it may be mentioned that at a recent meeting of the Woolwich Polytechnic Photographic Society, Mr. Henry Crouch, the optician, exhibited a beautiful slab of Jena glass, about six inches long, and which when viewed through its entire length was seen to be colourless. That particular glass may be too expensive for condensers, but it is to Jena that lantern condenser manufacturers must look with the best chance of success for a glass in every way suitable for their purposes. Professor Abbe and Dr. Schott are not likely to fail in relation to any matter they take up connected with glasses for manifold optical purposes.

* * *

Great credit is due to Mr. W. D. Welford for his successful management of the Photo Section of the Stanley Show lately held at Agricultural Hall. Nearly six hundred pictures were on exhibition, and about twenty firms made a display of photographic and lantern apparatus.

* * *

With the next issue we shall publish the index for the yearly volume.

* * *

A Merry Christmas to all.

Cylinder Explosion.

A fatal accident happened on the 8th ult. at the Exchange Station, Bradford. It appears that a boy, John Fuller, was carrying one cylinder of compressed gas on his shoulder, and dragging a second one along. From some unknown cause, he dropped that which he had on his shoulders upon the concrete floor, when immediately it exploded with a tremendous report, instantly mutilating and killing the messenger. From evidence at the inquest, we learn that the fractures were carefully examined by Professor Goodwin, of Yorkshire College, who found every one crystaline, with the exception of one, which he thought might have been due to a flaw in the material. In point of thickness the cylinder varied more than it should have, viz., from ·172 to ·184in., and in a well made cylinder this variation should be but slight. A second cylinder by the same makers, the Projectile Company, having been cut up, was found to be exactly of the same make as the broken one. Evidence was given that the steel of the cylinder was of very great tensile strength (50 tons), whereas that for such purposes should not exceed 32 tons per square inch. Steel of great tensile strength was unsuitable for the purpose, as it was so brittle. It was given in evidence that a cylinder of milder steel had that morning, by way of experiment, been dropped on to a block of cast iron from a height of 22½ft., and that the only result was that the cylinder received a slight dent. After a great deal of evidence, the conclusion arrived at was that the cylinder in question was made of unsuitable metal.

It is, doubtless, well known to our readers that cylinders of mild steel have stood very severe tests, both by internal pressure and by being allowed to fall from great heights, the only damage done in the latter case being a slight dent, while in the former case they have stood a pressure of over two tons, whereas the working pressure is only 1,800 lbs. It is questionable whether it is advisable to submit cylinders to the high pressure at which they are tested, as this may, perhaps, strain the material unduly.

As a preventive of any sudden concussion, the jury recommended that when cylinders are sent out they should be protected either in cases or otherwise. A variety of suitable coverings for cylinders are to be found in rubber, woodite, and other substances, but, considering the many thousands of cylinders in use, and the corresponding freedom from accidents, it is doubtful if coverings for cylinders will be generally adopted, unless the railway companies refuse to carry them unless incased in some covering of more elasticity than the cylinder itself.

We think from the evidence adduced that users of cylinders need have no apprehension of danger. In this case only the sudden shock acting upon an exceptionally brittle cylinder caused the explosion.

—:o:—

A Story of a Safety Jet.

Once upon a time, many years ago, at a meeting of a society called the London and Provincial Photographic Association, a manufacturing optician, whose name was and is Mr. Charles Darker, was "working" the optical lantern, when an incautious member asked his opinion as to the best safety jet for the mixed gases. Mr. Darker replied that if anyone present wished to buy a safety jet he should be happy to make one for him and to send in the bill; but his advice was to go without one and to take the risk.

"Why," said Mr. Darker, as nearly as we can remember his words, "my father invented the most perfect safety jet ever made on this earth, and was proud of it; it was in his thoughts by day and in his dreams by night; one fine morning it was finished, and one of my father's best customers came in saying that he wanted to buy a safety jet. He was told that he had arrived at exactly the right moment, for the most perfect safety jet ever made was about to be tested, and he could come into the workshop to see the experiments. A bullock's bladder was then sent for, and everyone knows that when a bullock's bladder is wanted no butcher ever has one. After a great delay and trouble, however, one was obtained, all covered with fat and blood. It was then filled with mixed oxygen and hydrogen gases, and put behind the wonderful safety jet. My father in high glee stood on one side of the jet, and the customer on the other. The mixed gas was turned on, a light applied to the jet, and then ——O, Lord! The customer wiped the blood and fat off his face, and went away without buying father's safety jet."

—:o:—

Gelatino-Primuline Lantern Slides.

Dr. J. Reynolds, a Brixton physician, has recently been experimenting with the primuline process, and a few days ago brought the results before the Brixton and Clapham Camera Club, of which he is president. Mr. C. F. Cross, of the firm of Green, Cross and Bevan, the patentees of the primuline process, was present on the occasion, and the opportunity was seized to ask him for particulars as to how they produced gelatino-primuline lantern slides. Dr. Reynolds had drawn attention to the value of such slides in the two points that they are free from grain, and can be obtained of different brilliant colours at the will of the operator.

The following is a formula for producing lantern transparencies:—

A solution is made consisting of:—

Gelatine	300 grains.
Primuline	80 ,,
Chrome alum	2 ,,
Water	1 pint.

This is freed from air bubbles by any of the ordinary means adopted for that purpose in making gelatino-bromide emulsions, then clean glass plates are coated with it at a temperature of 60° Centigrade. The plate is then put in a place free from dust to dry, and until the next stage is reached it is insensitive to light.

The sensitising bath can be made up in various ways. It amounts to this: it is an acid bath just sharp enough to the taste, and can be made with any acid, such as tartaric, citric, oxalic, or any mineral acid, and then nitrite of soda is added in sufficient quantity. So long as nitrous acid is present, which can readily be ascertained by the smell, it is sufficient. What the inventors recommend is an acid bath, containing from one to two per cent. of any of the acids mentioned, to which nitrite of soda five per cent. solution is added from a stock bottle in small quantities as required.

As regards lantern slides, the quantity of primuline is varied according to the density required, and the printing has to be done from transparent positives, not negatives. A half per cent. solution of primuline will do for some subjects, especially when the film of gelatine is thick; when the film is thin, a two per cent. solution of primuline gives a nice result; the operators must display a little judgment in the matter.

The nitrous acid in the sensitising bath "diazotises" the primuline; the plate has then to be washed in a stream of water for five minutes, and allowed to dry. If the film looks cloudy, the cloudiness can be removed with a soft brush or a tuft of cotton wool; the sensitised plates will keep for some days, but it is better to use them as soon as possible. Some of the plates are quite transparent, others are slightly opalescent.

The speed of the plates bears some resemblance to that of albumenised paper. The exposure may be perhaps five minutes in sunshine, and much longer in diffused daylight;

the colour of the plates fades wherever the light acts. To make certain of the exposure, some of the same sensitised material on strips of glass should be exposed under a similar positive, and a trial strip developed from time to time.

A curious fact about the primuline process, in which it appears to differ from all others in photography, is that nitrogen gas is liberated under the action of light. In a lantern plate this gas is occluded in the gelatine film, but comes from it and covers it with bubbles wherever the light has acted, when the plate is dipped in water. Wherever the light has acted less colour is produced in the developing bath, and where the light has acted fully there is no development of colour at all, hence over-exposure destroys the half-tones, and under-exposure leaves too much colour in the background. The slides are finished by a thorough washing in water and drying.

Primuline always leaves a slight yellow ground, which, in paper prints, sometimes adds to, and sometimes detracts from, the artistic effect. The inventors make a somewhat special primuline for the process. The residual pale yellow is not greatly noticeable in lantern effects, especially with the oil light, and even the lime light is somewhat poor in blue rays. Other diazo compounds than that of primuline can be used; for instance, the inventors get a light, cream-coloured background by using, instead of primuline, dehydrothiotoluidinesulphonic acid, which, as a lady remarked, must be a very fine acid to have such a name.

To produce the different colours, the following developing solutions are used:—

Red.—An alkaline solution of B-napthol; half an ounce of the liquid developer is added to a pint of cold water.

Maroon.—An alkaline solution of B-napthol-disulphonic acid. A quarter of an ounce is dissolved in a pint of cold water.

Yellow.—An alkaline solution of phenol. Dissolve two drachms in a pint of water.

Orange.—An alkaline solution of resorcin. Add half an ounce of the liquid supplied to a pint of water.

Brown.—A slightly alkaline solution of pyrogallol or a solution of phenelenediamine hydrochloride. Add an ounce of the liquid supplied to a pint of water.

Crimson.—Substance used not stated. An ounce of the liquid supplied is added to a pint of water.

Blue.—A slightly acid solution, strength one ounce to a pint of hot water, of amido-B-napthol-B-sulphonate of sodium-eikonogen or anglol. Use quite cold.

Other colours can be obtained by mixing the developers with judgment as to the proportions, because sometimes one developer may act twenty or a hundred times more energetically than another, so has to be added thereto in but small proportion to get an intermediate colour in the slide.

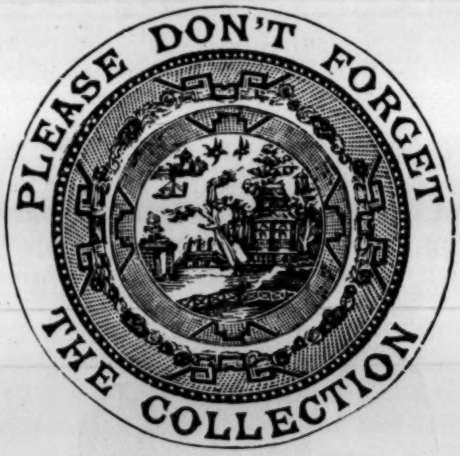
So far there has been great difficulty in getting a green colour with this process, although Messrs. Green, Cross and Bevan have succeeded once or twice. Mr. W. H. Perkin once told a story how a man had discovered a beautiful new coal-tar dye, but could not fix it, so consulted a local photographer on the subject, who told him that "hypo" would fix anything. The inventor tried it; the hypo made his dye change its colour, but then it was an excellent green for commercial purposes. The primuline inventors might try to get a green, or something else, with hypo.

—:o:—

New Apparatus, &c.

COLLECTION SLIDE.

On another page we mention that a lantern exhibition was recently stopped at Cardiff because a charge was made at the doors to defray the cost of advertising. Had the lecturer been provided with a slide of the character here shown, he might have admitted the audience free, and during the evening have passed a plate round, meantime projecting on the screen (as a reminder) this slide. Mr. Walter Tyler, of Waterloo Road, S.W., has registered this design, and is prepared to sell slides in blue tint at moderate prices.

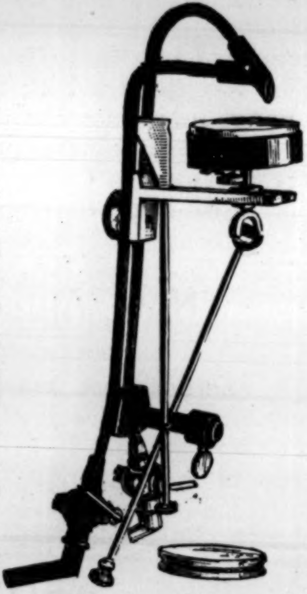


"THOMAS" FILM SUPPORTS.

A support for films is now supplied by R. W. Thomas & Co., Limited. It consists of a card upon which is spread a thin coating of what they term "adhesine." The mount having been thus prepared, the film is placed in contact with it, when it will be found to adhere with sufficient firmness for use in the camera. The film is readily removed from its support by lifting it by the corner, when it will be found to come away without any of the mountant. One coating will last for a considerable time, but when expended, a new coating can easily be applied, it being put up in bottles for the purpose. The supports are put up in packets of six.

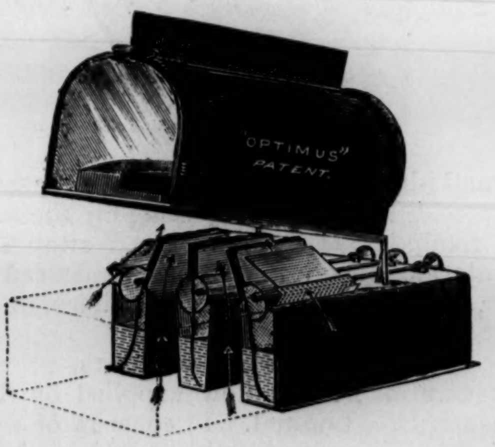
THE GROOVE DISC LIME ATTACHMENT.

This was brought out by Mr. Luscombe Toms, 78, Queen Victoria Street, E.C., and can be readily fixed to any jet in place of the ordinary cog-wheel. The lime is clamped in its position by a divided metal rim, and should it become cracked it cannot fall out as a groove is turned in its edge, into which a projection of the metal rim fits. With a blow through jet a better light is obtained with a flat lime than with those of cylindrical shape. As will be seen in the cut, two movements can be imparted to the lime, viz., turning and raising, the latter being effected by a wedge action, after each complete revolution of the lime. Mr. Toms has also a fine assortment of slides with reading.



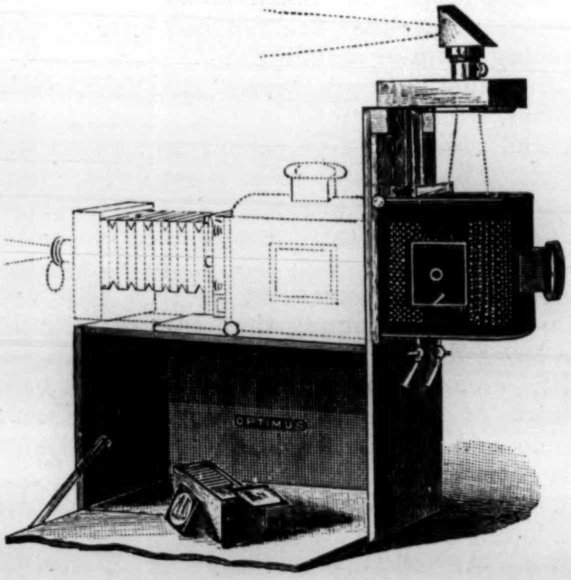
OPTIMUS LAMP.

In this new lamp Messrs. Perkin, Son and Rayment have provided an efficient method of admitting the requisite amount of air to the respective wicks by means of a channel cut through the oil chamber, that to the sides of the outside wicks being admitted through a perforation, as shown. With this lamp it is, of course, necessary to have a portion of the bottom of the lantern removed, so as to admit of a free draught, which besides adding brilliancy to the flame, serves to keep the oil reservoir cool. When trying this lamp we found that it gave an excellent light, and that it was entirely free from that unpleasant oily smell which is given off by many lamps. At the back of the lamp is fitted a reflector, in the centre of which is fitted a small red glass, through which one can see to manipulate the wicks. Owing to the method of obtaining a good draught, the chimney used with this lamp is a long one.



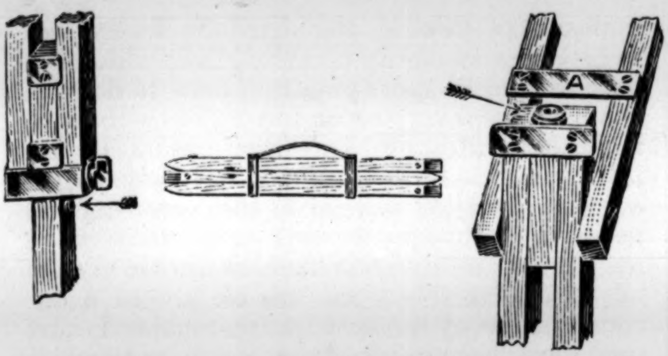
SCIENCE LANTERN.

The above firm have also introduced a science lantern, which can be employed for both vertical and horizontal objects. As will be seen from the illustration, the lantern is secured to a hinged base-board, which for horizontal work has merely to be lifted up (the bellows having previously been removed), and a prism or reflector slipped on the end of the lens. This having been done, it is only necessary to re-focus slightly.



CAMERA STAND.

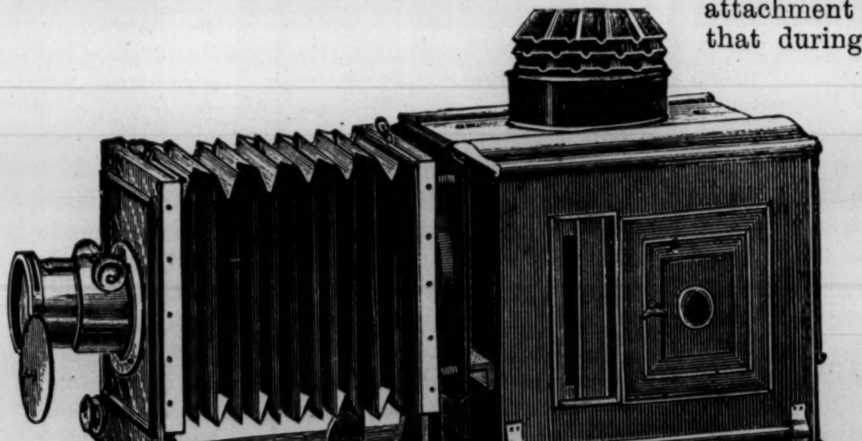
An automatic stand which can be quickly erected, has been introduced by the Thornton, Pickard Manufacturing Co. At each joint there is an effective spring catch which secures the legs in such a manner as to make them perfectly rigid. On the leg being swung open, the spring knob engages at the brass bar A. The lower section of stand is simply pulled out as far as it will go, when out pops the spring knob shown at the arrow, thus preventing the lower rod from sliding back. Should it be desired to lower the height of the stand, the lower portion of each leg is pushed in to the



required distance when it may be secured by the thumb screw shown. To pack up the stand is a very simple matter, it being only necessary to press the finger on the spring knob, when it is at once released. As the makers truly state, this automatic lock is superior to the usual form of button or screw fastener, as it entirely prevents any danger of the stand collapsing. Straps are secured to the stand for packing, and when folded up it occupies the small space of 21 × 2¼ × 2¼ inches. We anticipate having some pleasant outings with the stand that has been presented to us by this well-known company of Altrincham, near Manchester.

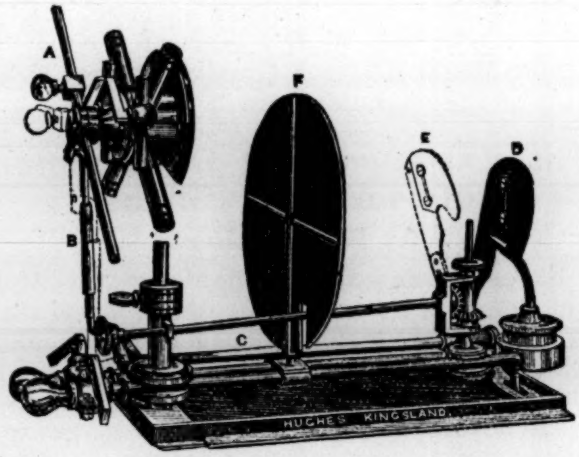
PREMIER LANTERN.

A **LANTERN** in Winter and a camera in Summer was the aim of Mr. Walter Tyler, of Waterloo Road, S.W., when designing his new lantern. The body of the lantern is made of Russian iron and has a brass top, doors both at the end and side, also facilities for inserting a tinting slide behind the condenser. The front is formed of a leather bellows which can be adjusted to suit the requirements by telescopic rods at the side of the lantern and which can be quickly and rigidly clamped. The front and back uprights holding the bellows are made of mahogany, and by means of the two rings shown the bellows can be lifted out of place, an operation which is desirable in many experiments. The stage, however, is an open one. As part of the outfit, a separate base-board is supplied and on to this the bellows portion may be attached. This, with the addition of a dark slide, forms a camera. Lenses of various foci are mounted in separate tubes which slide into the racking jacket or mount on the front of the instrument.



LIME-LIGHT SHUTTER.

A **COMMON** cause of complaint with double and triple lanterns has been, that after the gas has been turned off from one lantern, owing to the incandescence of the lime, a faint image of the picture appears on the screen for a short time, unless the lens shutter be closed. This inconvenience may now be considered a thing of the past, for Mr. W. C. Hughes, of Kingsland, N., has brought out an attachment which can be fitted to any jet, so that during the act of turning the gases off a small shield is being interposed in front of the incandescent spot on the lime. The plate of this shield is in two pieces, so that it can be made to fit any jet; a projecting arm is clamped to the lever of a star pattern of dissolver, so that the movement of the arm of the dissolver interposes or removes the shutter from the front of the lime.



A simple manner of preventing light from escaping from the back of the lantern is also shown in the illustration at F; it is made of asbestos.

SLIDE BOX AND CARRIER.

Mr. Hughes has sent us one of the most substantial slide boxes we have seen; it is made of thin hard brass, enamelled, and contains divisions for fifty-four slides. The box and lid are wire bound, which renders it exceedngly strong yet comparatively light. Two effective lid fasteners are provided, and the top and bottom of the case are lined with felt.

The carrier is of the pattern commonly known as the "lightning carrier," but it is provided at either end with a metallic inclined plane and is so constructed that when a slide is removed from the front of the condenser it rises above the level of the frame so as to be easily grasped by the edge, thus preventing finger marks on the surface of the slide.

CENTRING JET STAND.

We have recently been shewn an extremely simple and ingenious method for centreing limelight jets. The apparatus can easily be fitted to any lime tray, there are no cogwheels or spindles, but with this arrangement the jet can be adjusted to the greatest nicety; we believe Mr. F. Brown, 13 Ossulston Street, N.W., will be the manufacturer.

———:o:———

The Exposure and Development of Lantern Slides.

By Duncan Moore.

Exposure and Development are the Alpha and Omega of a good transparency, for on these two processes mainly depends the quality, colour and attractiveness of a lantern slide. The prettiest subject badly exposed or developed never affords satisfaction, whereas well managed in these particulars evokes the warmest praise. A bright, clear, rich image, no matter what the subject, always calls forth enthusiasm amongst all those who understand anything about the preparation of slides, and their name is legion, and no wonder. There is a satisfaction in viewing such work, because, simple as it seems, it is rather difficult to achieve, and those who make slides well know it. If all the negatives from which slides are made were of the same quality and kind, much of the difficulty would be done away with. Unfortunately, they are not so; but they vary—thin, dense, foggy, under-exposed, over-exposed, badly-focussed—have all to be reduced to the conditions of lantern slides. It goes without saying the best negative will produce the best slide; at the same time, much better results may be made from an indifferent negative than is frequently the case if the maker knew the best method of setting about it. A standard quality of negative for producing the best positive with the least trouble, should be rather thin, full of detail, fully exposed, and clear in the shadows; from such a negative the very best transparencies may be made. The opposite of this is the hard under-exposed negative, with plenty of clear glass, which will defy the most expert practical man to do more than secure a very second-rate slide at best, or if I said a fifth or sixth rate, would be not far wrong. It is much more easy to get a passable slide out of a thin over-exposed negative, although it may look worse as a negative, than from the hard, clear one. Pretty negatives for this work are clearly at a discount; some of the best transparencies I have seen have been made from indifferent-looking negatives. A word or two how to set to work with negatives of different qualities will, perhaps, not be out of place.

We must decide, in the first place, which of the three processes, viz., carbon, contact-printing or camera-copying, we shall adopt. A dense negative will give better results by contact-printing, and a thin one by the camera method. If carbon is selected, the negative must not be yellow in any degree, as a yellow negative is practically useless for carbon work; it is for this reason wet collodion negatives are generally preferred. A strong, bright negative will give the best results. In dealing with a thin over-exposed negative in the camera, a rather short exposure and a well-restrained developer is indicated with such a negative; it is almost necessary to use intensification afterwards, for the idea is to get as much clearness in the shadows as possible. Intensification, however, somewhat deteriorates the colour, but as the negative is faulty, something must be sacrificed to make a bright positive, which is the most important quality in a lantern slide. The colour must in a measure be left to chance; and as taste varies considerably in this matter, its importance is somewhat lessened. As a rule, warm tints are better liked than cold ones for most subjects, moonlight scenes excepted, which look more appropriate when of a greenish tint, in fact, any cold colour is to be preferred. For such subjects hydrokinom, eikonogen, amidrole, rodinal, metol, &c., may be used with advantage as developers. Very warm tints are more readily secured by pyro soda, and tints moderately so by pyro ammonia. In the average run of work pyro ammonia will take a good deal of beating. Longish exposures and restrained development tends to warm images, and short exposure with rapid development to cold ones. The addition of a little albumen (well beaten to a froth and allowed to subside, then strained through two or three thicknesses of fine muslin) to any developer is an improvement; it seems to make a richer-looking positives; but in using this agent there is a tendency to form air bells, especially if the developer is poured frequently backwards and forwards from the cup to the dish, but the operator being aware of this peculiarity can guard against it. A good black colour is secured by adding a little protosulphate of iron to the hyposulphite bath; it also improves the clearness. Dense negatives require a full exposure and a tolerably rapid development; but when they are deficient in detail, no amount of development will add more; the only care remains not to make them too dense. There is always an inclination to continue development when the detail seems to hang back so; the negative should be critically examined before commencing to prevent a continuation of the process after all the detail that is likely to develop has appeared. We are so apt to judge the image as it is forming for its own qualities, rather than from the negative from which it is being copied. The only improvement possible to make in a hard, under-exposed negative is to get a positive softer and more harmonious, not by reason of getting more detail and half-tone, but simply by reducing the contrasts. As a rule, such slides should possess a warm tone, which appears to add to the softness. In all lantern slide work scrupulous attention must be paid to the light in which the operations are conducted. A slight veil produced by light, that might be unnoticed on an ordinary negative, would much deteriorate the brilliance of the lantern slide. With regard to the kind of plates available for slides, the amateur has to choose between collodion and gelatine, unless he makes his own. The collodro-bromide will give the most beautiful delicate image, and owing to the extreme thinness of the collodion, a more brilliant picture than gelatine, which has considerably more substance, and usually a slight tint of yellowness, when compared with the collodion. Moreover, the collodro-bromide process is one that the amateur can work from beginning to end himself with ease; he can make a batch of plates over-night, and they will be all ready for use in the morning; in fact, a collodro-bromide plate can be exposed and developed without ever being dried at all, and give equally good results. The surface is unfortunately very delicate, and will not bear the least friction without damaging, such a contrast to the gelatine surface that will stand a tremendous amount of rough usage without receiving any harm. And to those accustomed to the use of gelatine plates it may appear even more delicate than it is.

Collodro-albumen—a process that may be conducted at home without any special appliances—is somewhat slow but excellent for contact printing, and the quality of the image is above reproach. There is a rich, juicy quality about the pictures that is very charming. I have in my possession some that were made five and thirty years ago, pure in the lights and brilliant as ever, and not excelled by any other process, ancient or modern. Carbon slides may be made any colour to suit the subject—a rich, purple brown is perhaps as good as any. For the generality of work the pigments in the transparency tissue is in such an extremely fine state of division, there is not the slightest granularity apparent in the most amplified images. In the preparation of these slides we pass from chemical to mechanical work, warm water dashed on the surface being all development required. Considering the facilities with which carbon slides can be made it is surprising not more are seen. I can safely recommend it as an extremely interesting process and well worth adopting by all who make lantern slides by contact; the tissue being flexible, fits into any inequality on the negative, so that there is no difficulty in having the positive as well defined as the negative, seldom the case when two ordinary sensitive plates are placed in contact. There is just this difference between a carbon image and a chemically developed one on any of the usual commercial plates. If we fill a long, tapering glass with a perfectly clear, slightly-coloured solution, the gradation and increase of colour from the narrow to the wide parts of the glass will exemplify what is meant by translucency; the intensity of the colour increases as the liquid becomes greater in volume, but there is no actual opacity even in the deepest part. With ordinary developed image the effect might be likened to opaque colour spreads in varied degrees of thickness on a white surface; we get gradation owing to the white ground shining through between solid opaque, or semi-opaque particles; but we miss that rich graduated appearance that is peculiarly the effect of transparent colour.

(To be continued.)

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Experiments on Stereoscopic Effects with the Lantern.

By W. H. HARRISON.

As the production of stereoscopic effects with the lantern is among the workable problems of the present time, it may be of interest to draw attention to some experiments made on this subject many years ago at the Free Trade Hall. Manchester, and not hitherto published, by Mr. J. B. Spurge, the inventor of the sensitometer known by his name, one of the most accurate instruments of the kind used by scientific photographers.

Whilst experimenting with the object of producing stereoscopic effects with projected images, Mr. Spurge threw two side by side upon the screen by means of two lanterns, then viewed these with spectacles composed of two prisms, the effect of which is, without the introduction of magnifying power, which in this case is not necessary, to yield much the same results as with Brewster's stereoscope when employed upon small pictures. This plan of viewing lantern pictures is not altogether new, but Mr. Spurge's method of making economical prisms was ingenious and vitally important, because the plan of placing an expensive instrument in the hands of every person in a large public meeting is outside the possibilities incidental to lantern entertainments.

Mr. Spurge bought different strips of plate-glass with bevelled edges, cut off the bevels in strips, and then cut the strips into prisms, thus he obtained a large number of prisms with different angles and at small cost. A peculiarity of this method of combining the pictures is that he found in the course of his experiments that at different distances from the screen a different angle of prism was necessary for the observers, but that prisms of one angle might perhaps answer for the sitters two or three rows of seats deep.

When the screen pictures are viewed with unmounted prisms three images are apparent, the centre one of which is stereoscopic, so in the mounting the two unnecessary images have to be cut off by the intervention of an opaque mask. Without the mask each eye receives two pictures, the two inner ones, owing to the refractive action of the prisms, coinciding with one another, consequently producing the stereoscopic effect. Having tried this with projected images 12 feet in diameter, and viewing them about 30 feet off, he found the effect to be almost equal to gazing at the original subject, as practically there is no loss of illumination.

He also states that he found that instead of placing the images upon the screen side by side, should the shape of the hall render it desirable, he could project one image above the other and obtain the stereoscopic result. Optically the arrangement is not then quite so perfect, and the prisms have to be differently arranged. By the normal method the two prisms have to be placed with their sharp edges towards the sides of the nose; by the other method the prisms have to be placed one with the sharp edge upwards and the other with the sharp edge downwards.

One great reason why the hand stereoscopes of old went out of fashion, and the trade therein was crushed, was the cheap and nasty manner in which many of them were manufactured in their optical parts, with fixed prisms, as if the eyes of all people were exactly the same. It was necessary that they should have been made with proper means of adjustment as to the distance apart of the prisms and as to their inclinations to each other, so that the observers need not be divided into three classes:—1. Those who obtained the full stereoscopic effect. 2. Those who could only see it painfully by straining, and perhaps the use of a little squinting. 3. Those who could not get the effect at all because of the unadjustable optical arrangement placed in their hands, so voted stereoscopy to be an imposition.

Perhaps the necessity for good power of adjustment will be found when Mr. Spurge's arrangement may be carried out on a popular scale. Another point should be borne in mind by the observers, namely, that if they would use spectacles ordinarily when viewing the images upon the screen, they must do the same when using the prisms. The same holds good with Mr. Anderton's plan.

Bad mounting of the pictures had much to do with the hand stereoscope going out of use. In fact, if stereoscopy by optical projection, or by the older method, is to become popular hereafter, and not again to lose caste, it is necessary that the arrangement of the pictures, also the optical appliances used, shall be controlled by persons who understand the scientific principles of stereoscopy, and not by those who are ignorant thereof.

In producing lantern pictures to give the idea of motion, perhaps Anschutz, of Lissa, who worked under the auspices of the German Government, has exhibited the results of the highest quality yet seen. In the first place when representing, say, a galloping horse, he took an extra large number of successive photographs of the phases of motion, and drove the pictures round in a circle at high velocity. As each picture came to the top and into the field of view, a brilliant image of it was cast upon the screen by means of projection lenses and a bright electric flash. Thus he avoided the jerkiness sometimes seen in such projections with which we are now familar, and he showed delicate motions of even the muscles of the horse, as if the living animal itself were there. Something of the same kind was recently exhibited in the Strand, but without optical projection, and with the light of an intermittent discharge through a vacuum tube, instead of by a powerful discharge in air as is necessary in optical projection.

The Use of Cameras in Winter.

By T. Perkins.

The winter is now rapidly advancing and many photographer-lanternists, by which I mean those who are not content simply to buy or hire slides for exhibition, but make slides from their own negatives, are laying aside, or have laid aside their cameras, and are devoting their spare time to the productions of lantern slides from negatives taken during the summer. But it seems to me a great mistake to doom the camera to five or six months idleness during the year. True it is that there are many workers whose only opportunities for negative-making are during their summer holiday, or in the early morning or late afternoon, before or after office hours, and these can do little from the middle cf October until the middle of March; but there are some who have fuller leisure, and may, if they will, utilize the best hours of every favourable day for outdoor photographic work. These should certainly keep their cameras and lenses in active employment throughout the year. For the winter lends itself to the securing of many pictures which it would be impossible to get at any other time of the year. And many of these winter negatives will yield most admirable and interesting slides.

The object of the present article is to call the attention of the readers of the "Optical Magic-Lantern Journal" to some of the work which they may do before the swallows come again, and the hedgerows clothe themselves in the fresh young green of early spring.

I have lived for many years in a hill-town in Wessex whence there is a commanding view over the vale of Blackmoor with its deep valleys and ridges of down, and I have noticed that at no time of the year have the effects of mist in the valleys with the hill-tops and the tree-tops rising out of the level sheets of vapour been so fine as at the close of the year, from September onwards, and these effects of mist give the country always beautiful and added charm, each ridge of rising ground, each clump of trees, stands out from the background with a distinctness never seen at any other time,—hence the idea of distance is increased, and the feeling of height added to the hills. These effects are of course best seen soon after sunrise, and the fact that in the winter the sun does not rise at an inconveniently early hour for getting up places the possibility of securing photographs of the scenery surrounding their homes under such aspects within the reach of many, who, without being sluggards, might fairly hesitate in summer to make arrangements for waking at sunrise, often to find out when they had curtailed their night's rest that the morning was unsuitable for photographic work. Then again, what can be more beautiful than successful representations of a frosty winter's morning. At times the leafless branches of the trees are weighed down by the mass of hoar-frost which has collected on them as the damp air has been brought into contact with the frozen twigs; the leaden sky behind them sets the white trees off by contrast if a gleam of sunlight falls upon the ice-clad boughs. The frozen river, the crisp reeds, the brown and yellow blades of grass showing grey through their covering of hoar-frost, the dark forms of the cattle, the flock of sheep gathered round the troughs in which their food has been placed, the trees in the distance growing more and more ghostlike in the sun-lit mist as they are farther and farther off the camera, provide materials for many admirable pictures. And these pictures are specially effective on the lantern screen. And although it might be supposed that the winter light is not sufficiently strong to allow pictures to be taken with exposures short enough to ensure that the animals will not have moved, yet it will be found from practical experience that very short exposures will suffice, for the sun-lit mist on frosty days clothes all the landscape with a whitish colour that is exceedingly actinic. Snow scenes also are far from unpleasing when well rendered. I have in my mind several views taken when a thin fall of snow had covered the ground, but not to such an extent as to obliterate the forms of objects, and a gleam of sunlight from the side, or even better, rather more towards the front of the lens, threw out the unevenesses on the snow-sheet, and the heavy snow-laden clouds, in some instances, stretching in a uniform sheet of grey, in some, piled in heavy masses of cumulus contrasted finely with the white landscape.

But even apart from effects of hoar-frost, or mist, or snow, winter allows certain views to be taken better than at any other time of the year. How often do we find a building concealed to such an extent by the heavy summer foliage of surrounding trees that it is not worth taking for architectural purposes, which is well shown when winter has stripped the branches of leaves; and even if the trees do not hide the building their shadows often prevent us from obtaining satisfactory negatives. An instance occurred during this autumn to myself. I wished to photograph two windows of a church, one a good example of decorated work, the other an example of the perpendicular style, and moreover rendered interesting as marking the scene of a striking incident in Mr. Hardy's well-known novel "Tess of the Durbervilles," but shadows from the trees in the churchyard greatly marred the success of the photograph. Sunlight was desirable for bringing out the details of carving and tracery by the aid of the shadows thrown into the hollows, but parts of the windows were in the shadows of the trees. To get a successful negative another visit must be paid to the spot in winter.

It is also sometimes an advantage to get the sun in a certain aspect, but low down; suppose, for example, a view of the building must be taken when the sun is in the south. In the middle of summer the sun, when it souths, is (in the latitude of London) at an altitude of about 62 degrees above the horizon, that is rather more than twice as far from the horizon as from the zenith, whereas in midwinter he is only about 16 degrees above the horizon at midday, or nearly five times as far from the zenith as from the horizon. It is easy to see what a great advantage this lower altitude may sometimes be. It will allow the direct rays of sunlight to penetrate much further into the recesses of porches and projecting doorways, and so produce a much more uniform illumination of such places; it may also be of advantage in interior work, as the light will pass from the windows further across the room or church-nave instead of falling on the floor almost immediately below the windows. A fall of snow may sometimes be of use in illuminating roofs and ceilings by the sunlight reflected, or, to use the more accurate term, scattered from its surface.

And once again there are many woodland views, which are exceedingly beautiful in winter; the rugged trunks of ancient oaks, or "immemorial elms," or the smooth bosses of mighty beech trees when taken near at hand, make good pictures; and these cannot be so well photographed when the dense summer foliage covers every side of the tree trunks with heavy shadow; and in winter, too, the beauty of the tracery of branches and twigs against the sky is well worth more attention than is generally paid to it. One who knows the country, as so many dwellers in towns know it, only in its summer guise, miss many of its beauties. Is it not well, therefore, that those whose lot is it to live in the country all the year round, and who, moreover, by means of photography have the power of representing nature in its less familiar aspects should take their cameras out with them in the winter as well as in the summer, and make negatives especially with a view to reproduction in the form of lantern-slides, which they may have an opportunity of exhibiting to those less fortunate beings who live in towns, where winter more generally is associated with gloom and fog? But even in towns sometimes the effects on bright winter days are very beautiful, and worthy of the attention of the photographer.

Almost every one, whether he lives in town or country, will do well to keep his camera and lenses always ready, and should never allow his stock of unexposed plates to be entirely exhausted. Any one who is prepared at all times will find his collections of prints and lantern-slides far more diversified and interesting than he would, were he to doas so many do, and give up outdoor work as soon as he returns from his summer tour to country village or seaside resort. And outdoor work in the winter, when opportunity allows, will not interfere at all with the making of lantern-slides by contact in the long evenings, and will interfere but little with the making of slides in the reducing or copying cameras—work that can well be carried on when, for one reason or another, the light and atmospheric conditions are not suitable for the production of fresh negatives.

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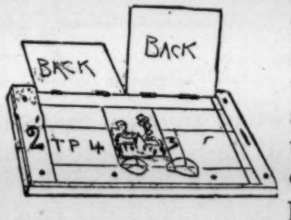
A Stereoscopic and Lantern Slide Printing Frame.

By George Kilburn.

The revival of the stereoscope is fast becoming an accomplished fact, and is likely to become as popular, if not more so, than it ever obtained in its earlier days. The reason is not far to seek why it is likely to attain its former popularity. In the first place we have a much larger number of photographic workers at the present time than practised when the stereoscope was in its heigh-day. Secondly, the large influx of photographers—both amateur and professional—has brought in its train a no small army of stereoscopic workers, who are now able to follow their special hobby under vastly different conditions to what the early votaries of stereoscopy were able to do. Makers of photographic instruments have been alive to the requirements of the times, and have placed in the market more suitable apparatus, thus facilitating and making more easy the productions of stereograms. Gelatine dry-plates and films have taken the place of dry and wet collodion for producing the negative, though many perhaps still adhere to the older processes for the production of the positive, or transparency. The object of this article is not intended to give instruction in any particular method or process for producing pictures, but rather, for the description of improved apparatus required for the same. Assuming that we are ready to print from the negatives already secured, and that both pictures have been taken on one plate—no matter what size—the question arises: How are we to make prints or transparencies from them? The answer is, we must either resort to cutting them with a diamond or glass cutter, or else adopt some means of printing by transposition of the negatives. Leaving the question of cutting the twin negatives, which is a risky operation to the inexperienced, as well as costly, the method I recommend is to make a printing frame, which I will try and describe for the benefit of the readers of this journal. I am not aware of one like it on the market, this one being my own invention, if I may dare to use such a term.

Cut a piece of board 12in. long × 6¾ wide and ⅜in. thick, cut out an opening in the centre of board 4¼ × 2¾, next cut two peices 6¾ × 1⅛ and two peices 9½ × 1in., all from the same thickness of wood ⅜in. The pieces must measure as given above after being smoothed over. Now fasten the narrow pieces on to the board with glue and a few screws, as shown in drawing. In fixing on the end pieces insert under each corner a thin bit of wood 1in. × ⅛in. to allow for thickness of negatives used, as I shall explain in showing its advantage and use. The back can be made to suit individual requirements. The drawing given shows it in two sections, and made to fasten down with buttons in place of springs, which are not necessary, and often cause negatives to get broken. If required for transparency printing only, a back all in one piece is best, as it is not required to be opened unless the new printing-out plates are used, when one like the drawing would answer best. If the back is made to allow for the thickness of negative and transparency plate, the difference between a transparency plate and a paper print can be met by using a pad of cloth between the back and print. To use the frame put in negative, say at the right-hand side of drawing, push the end under the piece, No. 1, in the space allowed for by inserting the thin bits at each corner. After adjusting the negative over the opening, next put over the transparency plate, or paper, if such is required. Bring one end of the plate or paper to the opposite end, No. 2, push it quite flush with the end, fasten the back down, and make the exposure. Unfasten and take out the plate, lay it on the back the same way as it lay in the frame to avoid mistakes; push the negative to the opposite end, No. 2, put the transparency plate on again one end flush with No. 1, and proceed as before. The advantage in using this frame is, by doing as I have stated, that accuracy with each picture is secured. It is easy to use and always certain. It is also suitable for lantern-slide making, and far better than ordinary frames. Fill in the opening in the ends with a narrow strip ¼-in. wide.



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The Lanternist's Den, No. X.

By C. E. Rendle

How to Build a Bi-unial—III.

It will only be necessary to describe one of the two slides, as they are both made alike; in fact, there's but one difference to be noticed, that in the hanging of the doors, and which will be treated as we proceed.

Now, by taking a cursory glance at Fig. 7, it will at once be observed that there are two stiles and three rails morticed and tenanted together, the five pieces thus forming a frame. The measurements for these will be as follows: Stiles 19½ in. long, and 1⅞ in. wide, and rails 6½ in. long, one 2 in., one 2¾ in., and one 3¼in. wide. First take the slides (AA). Let T and B represent top and bottom. Guide lines should be made 2 in. and 7¼in. from T, also 3¼ in. and 8½ in. from B.

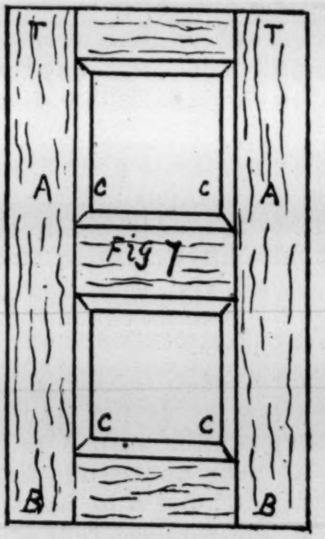


Fig 7

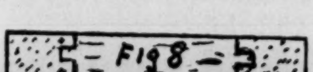
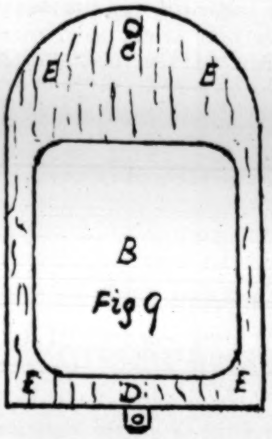


Fig 8

As both slides and rails will require to be rabbited to receive doors, this part of the work can now be done, using for the purpose a ½ in. rabbit and beading plane. About $\frac{3}{16}$th bead is best for size. See CC, Fig. 7. Prepare ½ in. tenons at ends of each rail, and mortice the stiles to receive them, referring to guide lines for the respective distances. When both rails and stiles have been nicely fitted, the various joints can be painted with glue, knocked together with a mallet, and laid aside for a few hours to set. Fig. 8 shows section of work just described.

Fig. 9 is a plan of the plinth, which we next prepare from a piece of 1 in. board. Be particular the wood be well seasoned, as before advised, for all depends upon a sound foundation.

As will be seen, the plinth acts as a stand for the body, and having a false bottom (B), allows a free current of air continually to be passing through the lanterns; and as will hereafter be shown by the construction of the lining, draught is avoided and the ventilation made perfect, thus doing away with the fan-dangled notions in the form of little doors and crevices one is sometimes introduced to by Mr. Vender. Afterwards we notice Mr. Vendee congratulating himself upon having something totally different from everyone else, but which proves of little use.

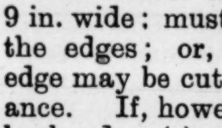


The timber should measure 15 in. long and 9 in. wide; must be well planed and squared on the edges; or, if tools are available, an O.G. edge may be cut, which gives it a better appearance. If, however, this latter be adopted, the back edge (A) may be left square with advantage, for we purpose hinging the body to the plinth, and not making it a fixture, as is usual.

The opening (B), which is 7 in. long by 6 in. wide, must be cut out, and if left round at the corners, as shown in the diagram, will add to the strength.

C is a round ¼ in. hole; D, a brass plate 3 in. long with a ¼ in. hole at the position indicated. This plate is screwed to the underneath of plinth at the back, and the object of these two holes will be obvious to all, viz., that thumb screws may pass through them to fix the instrument when set up for exhibition.

Four small brass knobs, each carrying a screw, may be fixed at E E E E. If the reader makes these himself, they can be turned and tapped as near as possible the size of Fig. 10; but if he has to buy them, the smallest that are stocked will do.

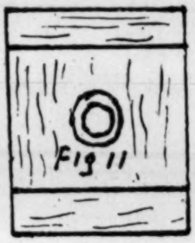


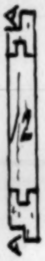
It is now time to screw the body together, but before doing so, all the joints should be examined; and as there are some overlaps to level down and smooth, they can be done. Much, of course, must be left to the judgment of the reader, for he will easily discover what should be left on and what taken off.

I would here mention that *brass* screws only are employed in lantern construction. Nails of any kind should be avoided; neither are they needed, seeing so few are required. For this purpose, 1¼ in. are best, and can be obtained at any ironmonger's.

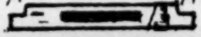
Make about eight holes in the front, and the same number in the back, countersink them to take the screw heads; in other words, cut away sufficient of the wood to admit of the slotted head to lie flush. Now proceed to screw the back and front to the two sides, taking care whilst so doing to keep the whole square. It will be found advisable by the uninitiated to put a couple of screws in front and back temporarily, to insure its being true. When permanently fixed leave the screw heads so that the slots run the same way as the grain of the wood. Now lap round a flat block some fine glasspaper, thus forming a buff, and use this up and down the joints of the body until all are perfectly flat and smooth.

The doors will next claim attention, and although of these there are four, only one need be described. Fig. 11 shows the front, fig. 12 side edge, fig. 13 top and bottom section. The door is clamped in the same way as the front, and to the reader who has already gone through the work of the latter, the former will come comparatively easy.





Take the outside measurements of the aperture, and cut a piece of wood to size to form the still A, fig. 11. Find the exact centre of this and strike a 1⅜ in. circle, B for peep-hole. Pierce out and see that it be left perfectly round and smooth. Mark from each side 1¼ in., see dotted line C, and cut tenons at each end about 1¼ in. in depth. Proceed in making the rails, and, when opened to size of tenons, glue and drive on, and then let set as before mentioned. When thoroughly dry cut away about ¼ in. all round, as A A figs. 12 and 13, until it properly fits in its respective place. Finish by smoothing with glass paper. The other three are to be made in the same manner, and, when completed, should be marked with lead pencil as to which opening they belong. This is very essential, and experience will show the amateur workman that however careful and accurate he may try to be, and that the two, four, or six articles he has completed, and which are supposed to be interchangable, are not so, in consequence of some slight variations unforeseen.



(*To be continued.*)

The Electric Arc Lamp and the Lantern.

By G. Davenport.

The question as to how far the electric arc light is available or desirable as an illuminant in the optical lantern has excited considerable differences of opinion from time to time among lanternists and those interested in optical projection. Much of this difference of opinion has doubtless been caused by the difficulty of obtaining a steady and constant supply of current at a reasonable cost, as well as by the want of a lamp or regulator adapted to the particular requirements of lantern work. The great development which has recently taken place in the public supply of electricity from central stations, and the ease with which the current can now be "laid on," has overcome to a large extent the first of these difficulties, whilst the popularity of the lantern as an instrument of instruction and amusement has caused special attention to be given to the production of arc lamps suitable for projection purposes, so that the second difficulty no longer exists.

Among the objections raised to the use of the electric arc light are the excessive amount of light given by it, the varying colour of the light and its unsteadiness. The large amount of heat given off by the arc has also been urged against it as causing the destruction of slides.

To the first of these objections it is very difficult to reply, as the amount of light employed in lantern work to some extent depends on individual taste, but more especially on the size of the image required; o be projected and the nature of that image. To obtain the best effects on the screen for a lantern slide the light requires to be increased or diminished to suit the subject of each slide—a moonlight or sunset picture, for instance, requiring less light than a bright landscape, snow scene or similar subject. This result can easily be produced with the latest forms of limelight jets, which permit the light to be raised or lowered by a turn of a screw. The same modification cannot at present be obtained so readily with the electric light. As a rule, however, the limelight is seldom used in this manner by lanternists, the jet being maintained at its full power as long as the lantern is in use.

In all cases where a large disc has to be covered the greater power of the electric light is a distinct advantage over the limelight, whilst its purer colour enables much better results to be obtained.

For scientific demonstrations, the projection of microscope slides, and for experiments with reflected light, and other purposes where the loss of light is great, the arc lamp is invaluable, as it is impossible to obtain satisfactory results with any other luminant except on a very small scale.

As regards the variations in the colour of the electric light, this objection, which was justified in the early days, and was due to the presence of impurities in the carbons employed, no longer obtains, as carbons are now supplied in a perfectly pure form, which burn, in a properly constructed lamp, without any variations in colour.

The want of steadiness of the arc lamp which was formerly so marked, and was due both to impure carbons and to badly constructed apparatus for regulating the feed of the carbons, is now easily obviated by the improved forms of lamps available, and especially by the more intelligent use and manipulation of such lamps.

The risk of damage to slides from the heat of the arc light depends principally on the amount of current consumed in the arc. With a lamp giving a light two or three times greater than that given by the best mixed jet, the heat is not sufficient to injure any ordinary gelatine slide, and the risk from this source is much less in proportion to the light obtained than with any other form of artificial light.

One of the drawbacks to the adoption of the arc light for lantern work has hitherto been the necessity for a somewhat extensive knowledge of electrical science on the part of the operator. This difficulty has recently been overcome by the invention of a simple form of lamp and connections, the working of which can be easily understood, and which has been designed so that it will fit into an ordinary lantern without alteration, and will permit of any other form of luminant being used when the electric light is not available.

Among the advantages claimed for the arc light may be mentioned the sharper definition obtained for the image by its means, due, of course, to the small space into which the source of light is concentrated. This, perhaps, is not always an advantage, as in a coarse-grained slide—in pigment slides, for instance—the constituents of the material employed in the slide are too apparent on the screen when sharply focussed. and injure the effect, whereas with a less concentrated light, the image, being less sharp, becomes softened and produces a more pleasing and artistic effect.

The readiness with which the light can be switched on and off affords a great convenience to those using the lantern intermittently, and is doubtless one of its chief recommendations.

There is no doubt that the prejudice against the use of the electric light for lantern purposes is passing away, and that as lanternists become more familiar with electricity, and the means of obtaining current increases, the arc lamp as an illuminant for the lantern will be more extensively adopted.

:o:

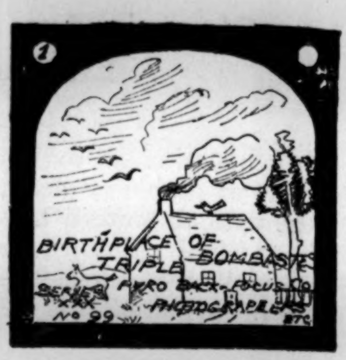
Essence of Wisdom, Triple-distilled.

WITH the Editor's permission, I, the Great Bombastes Triple; Lecturer, Lantern Expert, Inventor, etc., etc., intend to have a growl. Grumble, perhaps, is a more elegant word, but grumble, according to the dictionary, means "to complain without a cause." Now I have cause enough, so growl let it remain.

To begin with, look at the utter want of enterprise among the lantern dealers. Only this very morning Messrs. Pyro, Back-Focus & Co. have written to me, refusing to undertake to place my most recently invented lantern on the market. They say, "We think that the public seem inclined to invest in simple and workmanlike lanterns; and we find that there is really no demand for fancy articles just at present." My new lantern a fancy article! Why, it combined all the important points of every lantern that has ever been invented. And this is the return for the many testimonials I have given them! Messrs. Pyro's feeble witticisms concerning the necessity of an operator with at least four pairs of hands to work my improved slide-carrier I pass by. Such criticism is beneath my notice, and Messrs. Pyro & Back-Focus will please to consider my last order for 2 ozs. of hypo countermanded, and I beg to inform the firm that in future I shall procure my copy of "Photographic Scraps" elsewhere.

This little affair, however, is not in the least the cause of my present discontented frame of mind. Let me set before you one or two points connected with lantern apparatus which I, the great Bombastes, want to see improved.

For instance, why in the world should I be made a travelling advertisement for Messrs. Pyro, Back-Focus & Co.? Recently I have been getting together a specially selected set of slides, and the firm referred to being the possessors of a good series on the particular subject, I have had no option but to purchase the slides from them. The slides themselves are excellent, but they are defaced and disfigured by a totally unnecessary title and full particulars of Messrs. Pyro's business, address, etc. If this information was, as it ought to be, on the mask or slide-binding, it would serve a useful purpose, and no one could object to it; but for either Pyro's or Back-Focus' name to appear on the screen in my lecture on "The Boyhood of Famous Lanternists" is utterly ridiculous and absurd! That's one to me.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BIRTHPLACE OF TRIPLE BOMBASTES
SERIES XXX No 99
PYRO BACK-FOCUS Co PHOTOGRAPHERS ETC

Then there is another matter connected with slides. It would certainly be of great advantage if, during the summer months, the dealers would be willing to hire out certain lecture sets at a considerably reduced charge and for lengthy periods. If during the off season amateur lecturers could have, at moderate expense, sets of slides in their possession for a week or two at a time, and so make a thorough examination of them, and arrange beforehand the nature of the remarks to accompany their exhibition on the screen, it is evident that many of the uncertainties and drawbacks which attend the hire of an unknown lecture set for a single night would be obviated. For, given a set of slides and time to become familiar with them beforehand, the chances of a successful entertainment are much greater than where the lecturer derives his knowledge of the slides merely from the published lists, be these latter ever so detailed.

Again, since slides are so fragile, why cannot the ordinary binding be replaced with some material of a slightly thicker, softer, and more protective nature. Most of my own slides are double bound on the top side—that is to say, on the edge on which the slide falls when dropped into the carrier. I find it makes them more noiseless and it is an additional safeguard in packing them, too. All my carriers have the groove into which the slide falls padded with a strip of velvet (patent not applied for), but there! Messrs. Pyro & Back-focus would call that a complication and not an improvement. Yet it is upon these little trifles that my true greatness as a lanternist depends.

Here is another matter which calls for alteration if possible. Most lanternists have cause to bewail the expensiveness of the lime-light, while many are forced to content themselves with the use of oil lamps, until such times as the compressed gasses are sold at a cheaper rate.

Now, no one is justified in complaining of the price charged for oxygen. Until chlorate of potash becomes cheaper the gas produced from it must remain at about its present price, while in the case of oxygen, taken from the air by special process, those who invented and introduced this excellent method certainly deserve, for some time to come, all the profit that can be made. The plant necessary for the manufacture and compression of oxygen by this latter process is most elaborate and expensive, the gas produced by the companies holding the monopoly is of good and trustworthy quality, and it would ill-become any lanternist to growl because of the charges at present made for it. But if we must rest content to pay a rather high price for our oxygen for some time to come, there is no reason why we should tamely remain silent while so much is charged for coal gas.

Most householders get quarterly reminders of the fact that they pay from two to three shillings per thousand feet for their house-gas; are lanternists aware that for this very same gas, when compressed, they pay about 100 times as much? that they only burn about one pennyworth of gas in half-a-dozen lectures? that out of a charge of three shillings for a small cylinder of coal-gas the actual cost of the gas to [the dealers is only about one farthing, and the compression, hire and depreciation of the cylinder, &c., accounts for the odd 2s. 11¾d. Surely there is an excessive profit here? If a 20 ft. cylinder can be filled for five shillings, it is evident that a 40 ft. cylinder ought to be filled for about six shillings, the extra shilling handsomely recouping the dealers for both the additional time required in pumping and the increased amount of gas. The compression of coal gas has not required the invention of special machinery, nor is there any inventor to be rewarded; you turn on the tap, start the pumping engine, and there you are!

Since I, the great Bombastes, was born to teach people their own business, I will just suggest the following to the gas companies:—Lower the price of coal-gas to, say, one penny a foot and you will find that where one uses it now ten will then; and because one cannot use coal-gas without using oxygen too, your business will be vastly increased.

A little while ago the amount of gas used by lanternists was insignificant and almost beneath the big companies' notice, but the quantity now required increases year by year, and will increase more rapidly yet, if someone will only give us cheap coal-gas.

A reduction in the price of hydrogen would not merely save the operator's pocket; it would make the lantern more efficient, because it would bring into universal use the real, genuine, and, when all is said and done, the simplest and best limelight-producing apparatus, the mixed jet. Lamps, blow-through jets, and saturators, though all very useful in their particular way, are but poor substitutes for the real thing; and I certainly think that if coal gas were supplied in the present reliable make of cylinders at a cheap rate, they would become very nearly extinct. Saturators will probably hold their own in certain exceptional cases, but I think that, except perhaps in the matter of economy, it would be hard to convince any experienced lanternist that they possess any great advantages over a mixed jet and two cylinders. And what your Bombastes Triple thinks to-day, the the public think in a few years time, or perhaps never. Just now, much skill and ingenuity is being lavished on the improvement of saturators. So long as, like the present models, they are designed by experts in the matter, and constructed in a workmanlike manner, they are safe and efficient; but, then, any body can invent some kind of saturator, and when, as is probable, the market is swamped with the "given away with a tin of limes" sort of pattern of saturator, full both of inconsistencies and flaws, the public will quickly return to its first love, the mixed jet. In the meanwhile, many inventors are making efforts to improve the mixed jet, but unfortunately these inventors are working at the wrong end. New patterns of jets are becoming more and more complicated; they are being fitted with all kinds of intricate cog-wheel arrangements for centering the light. I will wager my best triple condenser against a shilling eyeglass, that the ordinary tray and pin in my hands will centre a light as quickly and as perfectly as any cog-wheel arrangement can possible do. But, then! I am the great Bombastes! The direction in which experiment and improvement is desirable is in the mixing chamber, and above all in the bore and shape of the nozzle and the angle at which the mixed gasses strike the lime. What is wanted is a mixing jet, plain and simple, not a mixed-up one, or one which claims an advantage because it can be used as a coke-hammer during the summer months.

Talking of limes, when is some enterprising individual going to supply us with accurately turned specimens of this lantern requisite? I have in my possession now some remarkable examples, with the bore in them as straight as a corkscrew. I hereby appeal to all good lantern dealers to give us truly turned limes, and to put them up in small air-tight cases, three in each, "three for the nimble ninepence."

Having, I trust, brought the dealers to a lively sense of their misdeeds, of their faults of commission and omission, I will now conclude. It shall never be said that the great Bombastes was unmerciful.

Although I have finished my growl it must not be imagined that I have nothing else to complain of. There are still sundry matters which, I suppose, unless your Bombastes sees to himself, will not be seen to at all. For instance, I want some genius (I expect I shall have to do it in the end) to invent a combined cylinder valve and regulator in one with no loose parts or joints. I want cylinders to be sent out in wooden cases: I want to see an opaque screen fitted as a fixture in all suitable halls and assembly rooms; I want the world to know what a great lanternist I am. These are just a few of my wants, but with my magnanimity I do not mind waiting a bit.

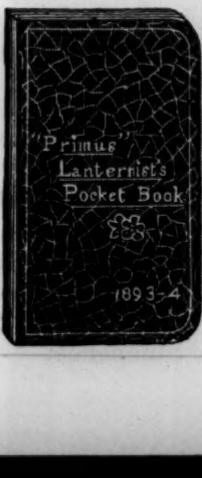
BOMBASTES TRIPLE.

P.S.—Just had a magnificent idea! What do you think of a new jet with the taps one-eighth inch in diameter so as to make use of the tubing off a baby's bottle? Think of the advantage! You find you have not enough tubing; round to the nearest chemist, and there you are. I shall write about it to-night to Pyro and Back-Focus and have it out by Christmas. So look out for the new "Triplet's Jet."

—:o:—

Editorial Table.

Fixing Salt.—Dr. Andressen has prepared a salt which gives at once a fixing and clearing bath for either plates or bromide paper. The advantages claimed are:—easily and quickly dissolved; soluble in any temperature of water; less bulky than hypo-sulphite of soda, therefore specially adapted for tourists and for export; hardens the surface of the films, hence the special use for all climates; stops at once the further development of plates or bromide papers, which need not be washed before fixing. The salt is put up in bars or cartridges, a 4 oz. bar being for dissolving in 40 oz. water. The agents for this and other preparations of Dr. Andressen, are Messrs. Schwarz & Co., Dashwood House, 9, New Broad-street, E.C.



"Primus" Lanternists' Pocket Book, 1s., by Messrs. Butcher & Son, of Blackheath, S.E The book is neat, of convenient size, and contains various reference tables relating to focus of lenses, capacity of cylinders. and also contains a number of dodges in addition to several pages upon which can be entered engagements, records of gas used, slides hired, and many other useful memoranda.

Lawson's Saturator.—We have to thank Mr. Lawson for fitting his new lime-turning arrangement to our saturator. Hitherto it was necessary to open the lantern door when turning the lime, but by the new method this is done from behind.

Messrs. Peek, Frean and Co., the well-known biscuit manufacturers, of Drummond-road, S.E., have sent us the two lantern slides which they, in their advertisement on another page, offer to send free to those willing to exhibit them. The slides are of a humorous character, one being an attempt to get a donkey to go into a pond, and the other illustrative of the difficulties of an Irishman endeavouring to hold a pig and at the same time light his pipe. Across the upper and lower portions of the pictures the firm advertise their biscuits.

Christmas and New Year Mounts.—A sample box of the above has been received from Messrs. Percy Lund and Co. The cards are in great variety and adapted for prints of various sizes. Some are made to stand as an easel, while others are of the folding form; others, again, are on thick bevelled boards. According to size and style, the prices of a packet of these cards range from one to two shillings.

Slides, Plain and Coloured.—Judging by a few slides recently received from Mr. T. T. Wing, of Chatteris, he shows himself to be both a good photographer and wielder of the brush. Mr. Wing, we understand, makes slides, &c., from customers' negatives.

Photo. Printing and Enlarging.—Messrs. Elliott and Son, of Barnet, have issued a twenty-six-page pamphlet, which gives very full particulars respecting the manipulations relative to the carbon process. As this interesting pamphlet is to be presented to all who apply for it, we would recommend those of our readers interested in the subject to send a stamped wrapper before the edition is exhausted.

Catalogues.—Mr. W. L. Reed, of 7, Westmoreland-road, Newcastle-on-Tyne, has issued an interesting hire list. The cost for hire of apparatus and slides is given in detail, and the prices are at such a moderate rate that there is no room for complaint on the part of those getting the slides or outfit.

Comic Slides.—Mr. Winter, 71, Hatton Garden, E.C., is now making some fine comic slides of a skipping, jigging, and swinging nature. He supplies the trade only.

Curtain Slide.—Mr. Bishop Dockett, 48, Corrinne Road, Tufnell Park, N., has sent us a richly-coloured slide, from the curtain design we published in last journal.

—:o:—

Correspondence.

LAWSON'S PATENT SATURATOR.

Riley Bros., of Bradford, having been advised that certain Saturators which are on the market are infringements of the above patent, of which they are the Licencees, hereby give notice that proceedings will be taken against all persons making, vending or using such infringements. Dated 23rd November, 1893.

MORGAN & MORGAN,
Solicitors for the said Riley Bros., Bradford.

HOW TO KEEP LIMES.

To the Editor.

Sir,—Those persons who have to carry about a few limes for lantern shows sometimes find that the limes, if the case has been left about, have absorbed moisture from the air, through the case not being perfectly air-tight, and have become unfit for use. Limes may be kept in a tin tube for 12 months or more and be as perfect when used as on the day they were made if the following precautions are taken.—Purchase an ordinary tin tube sold for the purpose for 1s. These have screw tops; beneath the screw stop place a small indiarubber band as a washer, and with the limes put in a piece of calcium enclosed in cotton wool. A piece from an empty platino-paper tube will answer every purpose and the limes will keep in the tube without deterioration.

Yours truly,
W. MILES BARNES.

ADVERTISEMENT SLIDES.

To the Editor.

Sir,—I was led by advertisement in your last to apply to Messrs. Peek, Frean & Co. for a set of slides. They came to hand (are good slides), but the conditions as per accompanying letter are scarcely what one is led to expect. I returned the slides, refusing to be bound by any such conditions, and at the same time pointed out that lanternists were not under any obligations to advertisers, but rather that advertisers were under obligations to the lanternists for the gratuitous display of their advertisements. Other large advertisers take my view of the case, and express their gratitude that they can have such a privilege. Messrs. Pears sent me a mechanical slide of "Dirty Boy," costing 10s.; Cadbury Bros. sent me three copies of their ads., cabby drinking "a cup of grateful," village blacksmith's daughter bringing her father "a refresher," and Tammy O'Shanter looking "happy now he's got it"; Messrs. Watson sent me two, girl swinging beneath the banner of "Venus Soap," and a child exhibiting her white pinafore made extra white with "Matchless Cleanser," without conditions. I may say that hundreds of eyes have set upon these ads,, and no doubs hundreds of mothers have been told by their youngstert what they have seen, and if we are to believe what Mr. Gladstone says of advertising, "that it is the constant reiteration of the advertisement that tells, then surely these pictorial advertisements must be productive of good to the advertisers, and ought to be appreciated without any such conditions as those contained in the letter. I would advise lanternists not to accept slides of this character unless presented *gratuitously* free from any restrictions. I may say that when I exhibit advertisement slides I always try and point a moral and tell a tale, *e.g.*, Cabby and his cocoa, far better to drink cocoa than beer, he is more likely to have his "head clear and his feet warm"; Dirty Boy, I tell the wonderful story of Focardi, the sculptor, in connection with this study; Matchless Cleanser, that cleanliness is next to godliness, and if more soap were used, there would be less dirt, and so, morally, etc., etc., so that you see it is quite possible to make even this class of ads. really instructive if pains be taken. I see *Review of Reviews* contains a similar announcement to your last. I should advise Messrs. Peek, Frean & Co. to alter their terms, and then their offer will be more highly appreciated.

Yours truly,
GEO. HODSON.

Elland, Nov. 18th.

Copy of letter received from Messrs. Peek, Frean & Co. —"In accordance with your application, we have pleasure in sending by accompanying post the two following magic lantern slides, viz., 'Irishman,' and 'No Go,' which we shall be obliged by your kindly returning to us at the end of the season, say in May next, with a postcard stating approximately how often you have been able to exhibit them, and before how many different people. (No charge is made for the hire.)."

SHUTTING OFF LIGHT IN SCREEN.

[*To the Editor.*]

Sir,—I would like to inform B. J. H., and others interested, that when using unframed slides and a biunial lantern, they can easily overcome the inconvenience of the incandescence of the lime (just after turning the gas off) projecting a faint image on the screen, if they will use one of the double to-and-from carriers, known as "lightning carriers." Into one of the sides for slides a piece of cardboard may be inserted, so that when the carrier is drawn out for removing the slide, the portion containing the card will be drawn in front of the condenser.

Yours truly,
Newport, Mon. HAROLD E. SMITH.

DOUBLE CARRIER.

[*To the Editor.*]

Sir,—On page 179 of last month's journal the statement is made by Mr. Norton that the lightning carrier was the invention of Mr. Groves. This is incorrect. I alone am responsible for the introduction of the double carrier, and I, in 1870, took my idea from the double-slotted block, and the first that were made were made by me for Messrs. Myers & Co., of Bernard-street.

Yours truly,
F. BARTLETT.

3, Millfield-road, Edmonton.

WHO INVENTED DISSOLVING VIEWS?

To the Editor.

Sir,—It is pleasing to see another letter on this subject, from so good an authority upon the history of the lantern in this country as Mr. Edmund Wilkie. I now note his point, namely, that in searching early-published records about dissolving views, it is desirable to take note, if possible, whether they refer to the earlier or to the later dissolving effects. Can he and others give the dates more closely? For instance, Mr. Wilkie gives the year but not the month in which the Polytechnic was opened. It would be no joke for me to search the London daily papers for a whole year to find contemporaneous records. Will the contributors to this discussion kindly give me all the dates and places they can?

W. H. HARRISON.

(*To the Editor.*)

Sir,—Having been directly appealed to by Mr. Wilkie in his letter in this *Journal*, last month, to reiterate the statement I made in my article on "Dissolving Views," respecting the date of invention (and which has brought forth so much correspondence), I have only to say that Mr. Hill was my informant, and if I did not couple his name with Mr. Childs' because I did not think his partnership or active co-operation existed at the time, or at least, did not understand it to be so, for I never thought for a moment my juvenile-looking friend (Mr. Hill) could have been old enough in 1846, and the five years previously, to have rendered any more assistance than the average of youthful pupils give to their masters. If, however, he says he was more than 17 in 1846, I shall know he is over 64 years of age now, and I shall accept as a fact the statement he makes that he did assist the late Mr. Child to invent dissolving views, and shall ask him, when I next meet him, quietly, the secret of his juvenescence.

That Mr. Hill, and the pupil of Mr. Child and his successor, co-operating with those that use and order slides, have done much to elevate the artistic tone of dissolving views, and improve, not only landscape, but figure views, those interested have only to visit one or other of the houses where the higher class of lanterns are sold and these slides are stocked to judge for themselves.

Yours truly,
G. R. BAKER.

London, November 18th, 1893.

Extract from "Chambers' Information for the People," published in Edinburgh, 1848. Optics, page 253.

"Lately, the mode of representing scenes has been further improved by using two lanterns, placed at equal distances; in this case, while the view in one is being withdrawn, the view in another is coming on, and the eye is charmed with seeing, for example, a scene in winter dissolve and assume the appearance of a similar scene in summer."

One would like to define the word *lately*, exactly.

G. B,

—:o:—

Notes and Queries.

H. D. Bull.—The paragraph in our contemporary in no way alters our views. Our allusions to ether saturators were made with reference to the modern styles. In May, 1892, the first description of the new form (Lawson's) appeared in this journal. In the June number Mr. Scott, who invented a saturator of a different form, endeavoured to show that the saturator that went into the lantern was an infringement of his patent; and, in reply to this, Mr. Pumphrey, who had some years ago also invented a saturator, showed that Mr. Scott's argument was not sound, and at the same time said (of course with reference to the saturators which had hitherto been in use) "the days of saturators passed away with the introduction of compressed gases." Although it may be true with respect to the old forms of saturators, still when it was said the new and present form had not then been introduced to the public, and in fact was not sold until a subsequent date, consequently he could only have reference to the old styles. However, as a matter of fact, since the introduction of the modern forms which have stood every test, and been found satisfactory, saturators, instead of having had their day, have become more general in use, but, as we said on a previous occasion, saturators are yet in their infancy. The item quoted by our contemporary (who, by-the-bye, we observe, admits raking over the *old* numbers of this journal in search of what he is pleased to term *news*) is of about the same value and interest as if he had turned up an old paper and quoted as an item of news of the present day from one of the many letters that appeared about the time of the introduction of steam for propelling ships, such as "Mr. —— states that, although a vessel has been propelled by steam, it is highly dangerous, and will never become popular." The old form of saturator has given way to the new kind, which in turn may at some future time be superseded by one still different, but to say upon the introduction of a new make of saturator that they have had their day would be absurd, better to say "that the old form has had its day."

W. H. Bailey.—Your communication was forwarded to Sheffield.

R. Goddard.—Your question with regard to the primuline process is answered in the article upon the subject which we have given on another page.

F. C. Heath.—(1) Why not use the half of your condenser for the tableau vivants? (2) The large size that you speak of was evidently intended for enlarging purposes. For the work which you intend, the large size would not gather up a greater angle of light than the one of 5½in., for with the large one the light would require to be further from it. (3) The size of circle of light is not governed (as when using an objective) by the distance you have the condenser from the figures, but by the distance of the light from the condenser.

Disc.—As far as the blow-through jet is concerned there is an advantage.

W. J. Roberts writes: Will you kindly tell me what is the best material to pack a saturator with? I have tried flannel, cotton wool, paraffin lamp wick, but to no good purpose, as, after a few times of using, it gets hard and clogged up, and won't work with certainty. Thanking you in anticipation. *Answer.*—Perhaps you use flannel of too fine a quality, and too tightly packed. We have found that coarse flannel and asbestos cloth alternately answers well.

W. J. Archer.—You forgot to send the two night views promised. We shall be pleased to receive them at your convenience.

Geo. Daltry.—(1) Dalton's cold lacquer may be obtained from tha Dalton Manufacturing Company, 12, Peter-street, Manchester. (2) If the ether in a saturator becomes exhausted the light will merely go out, but before doing so you will have ample warning, as the light will gradually get fainter and fainter. After it thus goes out you will simply have a stream of pure oxygen playing upon the lime.

Fred.—(1) The effect you mention is produced by not placing the light at the requisite distance from the condenser. Adjust it until you get a proper disc. (2) See article on another page.

W. Vicarey.—ION, Jabez, Bloom, Jones, Wedge, Hobson, Brown, Cook, and others. See article on another page.

A. W. Hiddon.—No room for the form *re* arranging lectures. Next Journal.

Fred Taylor writes: Can you tell me where I can get a reading of Cruickshank's "Gin Palace," as it appears to be out of print? *Answer.*—Messrs. York & Son.

D. Welsh.—We cannot recommend any one firm in preference to another from whom to purchase the lantern outfit, and can only call your attention to the advertisement pages.

J. Melton.—(1) Unsuitable materials. (2) We do not know of any set of slides dealing with the subject of cruelty to animals.

A. H. Baird.—In our next.

Blandford.—You must use your own discretion, we cannot give you a guarantee about advertisers.

W. B. Roberts asks: How can I get a line engraving tranferred on glass, so as to use it for a lantern slide? *Answer*:—Coat the glass with dammar varnish, and after it has been allowed to stand until slightly sticky, then place the paper with engraving on—which must be thoroughly soaked in water—upon the glass and squeeze well and allow to dry, after which the paper can be rubbed away with the aid of a little water, which will leave the ink only upon the glass.

Last winter twenty-five entertainments were given by the Charitable Lantern Entertainment Society According to the balance-sheet, just issued, the receipts were only £17 1s. 0d., whilst the expenditure was £22 13s. 9d., thus showing a deficit of £5 12. 9d., which is due to the Hon. Sec., Mr. F. Simmons, 158 Frances Terrace, Herne Hill, S.E.